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ABSTRACT

This booklet is the fourth in a series designed to assist parents who are home-schooling their adolescent children and focuses on teaching a foreign language, history, science, and physical education. The articles in this booklet are: (1) "Habla Espanol? Tackling Foreign Language," examining effective and ineffective foreign language instruction experiences, current instructional materials, and strategies recommended by foreign language hobbyists; (2) "History for Everyone: Beyond Names, Dates, and Places," examining how adolescent history study differs from that by younger children, and discussing creative approaches to studying history; (3) "Learning and Doing Science," examining the dichotomy of classroom science and real world science and providing suggestions for approaches to science with teenagers; and (4) "Lifetime Fitness," focusing on accessing sports and lifetime fitness opportunities within the community. (KB)

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HAPPILY HOMESCHOOLING TEENS:

Beyond The Three R's

by Cafi Cohen

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HABLA ESPAÑOL? TACKLING FOREIGN LANGUAGE

by Cafi Cohen

I took six years - count 'em, six years of Spanish in school, from grades seven through twelve. In class we struggled to apply "rules" that worked, at best, 90% of the time. Every night at home, we memorized new vocabulary, conjugated verbs, and practiced dialogues. The teacher taught in English, and we translated every Spanish phrase - even untranslatable idioms - into English.

My first year at U.C.L.A. (an institution which took great pride in its "scientific" foreign language instruction), I took French. First words out of the teacher's mouth were, "This is the last time you will hear me speak English." And it was. She conducted the class entirely in French. This was better. Each week, we heard the language five hours in class and three additional hours in the school's language laboratory.

The results? Well, let's see. I can slowly read newspaper level Spanish and French. I understand maybe fifty percent of spoken Spanish, much less spoken French. Attempting conversation in either language makes me nervous. Six years of Spanish and one year of concentrated French did not make me fluent.

Of course, in homeschooling our children, I had hoped to do better. Throughout our children's teens, we tried several approaches. About age 13, my daughter attempted a self-instructional Russian program. The program taught using audiotapes and pictures, with no English translation. She worked on it about six months, got bored, and gave up.

A year later, my daughter and I tried I Latin together, using a middle-school Latin text, a set of flash cards, and a garage-sale college Latin reader. We actually progressed, eventually reading some Latin literature in the original.

My son, at roughly age 15, attempted a high-school-level correspondence class in German. The instructional methodology closely paralleled that used 20 years earlier in my own high school classes – textbook, grammar exercises, more rules. The results were so dismal that he never completed the course.

Following that, my son, my daughter and I studied Spanish - all at the same time - using videos, cassette tapes, local TV and radio programming, and occasionally talking with native speakers. This was better. We were able to converse - basic conversation, nothing deep – and enjoy Spanish language television.

Since our children have left home, I have been working on a list of lifetime goals that includes fluency in a foreign language. Investigating resources and approaches to teach myself has yielded additional insights. Finding The Best Way To Teach Me has finally pointed to what I should have attempted with my teenagers.

To research my own foreign language learning:

- I thought about my previous foreign language instructional experiences: what worked, what did not.
- I reviewed techniques described in current foreign language instructional materials.
- I read about and talked with foreign language hobbyists, people who learn languages for the same reason that others quilt, play word games, or climb mountains – for the fun of it

THINKING BACK

I knew that formal foreign language instruction – several years of it – got me at best, a rudimentary reading knowledge of the language. Unfortunately, memorizing an increasing catalog of Rules and Exceptions To The Rules left me

tongue-tied, even with patient native speakers.

Querying friends about their experiences enhanced this impression and left me thinking that the results of school foreign language instruction are dismal. Typical classroom instruction is not the road the fluency. Worse yet, most students who take foreign language classes emerge from the experience convinced that they are "bad at languages".

Looking back, I see so many missed opportunities. Never - in my high school and college foreign language classes - did my instructors invite native Spanish and French speakers to class. I grew up in California surrounded by Spanish speakers and attended U.C.L.A., where daily I met people fluent in other languages. Yet no teacher thought that exposure to a native speaker would be better use of class time than conjugating a list of verbs.

Never did my Spanish or French teachers suggest applying foreign language to our daily lives. Never did anyone mention the thrill of reading Spanish and French authors in the original; nor did they mention the ideas subtly altered or lost in translation (not to mention untranslatable poetic nuances). Never did anybody intimate that some people learn foreign languages just for fun. In fact, educationists articulated only two reasons to study a foreign language: "It will look good on your transcript," or "You need this for your major."

Other observations? I had read about children who were transplanted from one country to another. Like magic, these children and teenagers all spoke their new language within one to two years. Living in a foreign-country and using the new language all the time seemed to be very effective.

I had also observed that music cements foreign language words and phrases. Think about singing Frere Jacques in the original French. The phrase "dormez vous?" in that song is very easy to pronounce and remember. Even now, I remember all the words to the Spanish tune, Cielito Lindo, which I learned as a teenager.

From our homeschooling experience, we all saw that we learned Spanish more completely when we tackled it together. Additionally, we found that we retained more when we used the foreign language for real purposes – asking someone to set the table or feed the dog or open a window.

INSTRUCTIONAL MATERIALS

After cataloguing my foreign language learning experience, I found that reviewing the many new foreign language learning materials on the market gave me more ideas. For example, one technique the Power-Glide program uses, diglot weaves, involve communicating in a mixture of two languages and gradually increasing the percentage of the foreign language. Here is an example from the Spanish course: "Would you like me to tell you un cuento? Oquei, let me tell you un cuento about some naughty muchachos – some muchachos y some muchachas – who were playing with a ball in la calle near una casa."

Other programs (e.g. The Learnables) showed me the utility of learning foreign languages using pictures. No back and forth English translation here. Thinking in the language comes more easily without the translation crutch. Tape cassette programs also showed me how much foreign language exposure any family can chalk up during daily errands in the car.

Several CD-ROM computer programs I have reviewed now make drilling vocabulary, idioms, and usage easier and more entertaining. CD-ROMS also provide a video input (great for visual learners) to enhance and reinforce audio learning. And CD-ROMS provide listening experience with a wide range of native speakers.

LISTEN TO HOBBYISTS

After thinking about my experiences and reviewing several programs, I began reading about and discussing strategies with foreign language hobbyists. Here were the best tips of all. Foreign language hobbyists prove it daily: yes, you can learn and teach a foreign language, even if you do not know one. Here are some of their suggestions and my associated comments on learning a foreign language in a home-based program.

LEARN TOGETHER

Most homeschooling parents – because of time constraints or simple lack of interest – limit the subjects they learn with their teenagers. They hope their teenagers can and will do most projects independently. Foreign language learning is one area where it pays to be more involved. Learning Spanish or French or Russian is a social activity, a group activity – probably more so than almost any other type of learning. Learn – as much as you can, as much as you have time for – with your teenagers. Of course being younger, they will probably catch on more quickly. That's all right. Give them a chance to show you up.

MOTIVATION

Foreign language hobbyists tell us that two elements provide motivation and thus are crucial to success. Those elements? First, do it daily. And second, set a goal.

Do it daily. Hobbyists cite a number of useful techniques, but all say the most important learning and motivational tool is doing something every day to increase command of the foreign language. The daily activity can be anything - reviewing flash cards, listening to music in the target language, watching foreign language TV, reading a selection with a translating dictionary close at hand, doing grammar exercises, practicing conversation, constructing diglot weaves, and so on.

Daily exposure is much more important than the exact methods you use. Stated another way, almost any method will fail without the daily exposure; almost any method will succeed with it. The hobbyists also say (and my own experience confirms) that learning creates its own motivation. The more you know, the more you want to know.

Most hobbyists cite a second major motivator. They recommend tying foreign language learning to a goal, ideally a fun goal. For example, plan a family trip (which may well be several years in the future) to Mexico or French-speaking Canada or even to Europe or the Middle East. Study Turkish or Japanese because your military family may be stationed in Turkey or Japan some day.

Goals can be relatively simple, even whimsical. My daughter and I initially chose Latin so that we could read the Latin translation of Charlotte's Web.

Another teenage homeschooler I know learned German simply to communicate with a neighbor. Along these lines, some teenagers will want to study French or Russian to better communicate with foreign pen-pals.

SELECTING A FOREIGN LANGUAGE

In choosing a foreign language, consider several factors. First, in families with more than one child, restrict the entire family to the same foreign language initially. Second language acquisition is tricky enough without multiplying your work unnecessarily.

For the same reason, strongly favor any foreign language with which the parents have some experience. You may think your high school German left you best equipped to communicate only in the

present tense with lots of gestures, but you will be surprised how much even rudimentary knowledge can ease your teenager's path.

In selecting a language, think also about how easily English speakers will pick it up. According to web writer M. T. Lawry, "Languages are considered 'hard' if they are highly inflected (like Latin), irregular (like French), or use a significantly greater percentage of the International Phonetic Alphabet (like Russian) - or any combination of the three (like Farsi, Sanskrit, Greek)." Based on ease of acquisition alone, probably Spanish and Italian are the primary candidates for foreign language study.

What's the next factor in choosing a foreign language? Ask, "How easily can we find free and inexpensive materials?" With the widespread use of the WEB, anyone can find good materials (not to mention free tutors and helpful pen-pals) for almost any language (see sidebar). Nevertheless, check the availability of audiotapes and videocassettes and other foreign language instruction materials at your library.

Review foreign language television programming in your area. Most of us have free Spanish and French lessons on PBS, but does your area also offer German or Arabic? In the same vein, network to find any local freebies. The Jewish Community Center in our small town offers free Hebrew lessons. What's available where you live?

Also ask, "Are exceptional materials available for languages we might not otherwise consider?" This is one good reason to consider Latin. There are so many excellent study aids and resources on the market – those written primarily for homeschoolers are outstanding.

Additionally, check the foreign language offerings at large used and new bookstores near you. Throughout the southern half of the United States and certain large northern cities like New York, Spanish predominates; you will have no trouble finding materials. If you are considering another language, research the materials immediately available before you decide, noting especially those that are free.

Other factors to consider? Those teenagers with definite goals should ask, "Would a particular foreign language enhance my intended career?" For example, employers of computer engineers tell us that Japanese is their first choice as a second language for their employees. Teenagers planning military careers should consider Arabic and German and Turkish and Russian. Future physicians and nurses and veterinarians will want to focus on Latin. Classically-trained singers often learn German, French, and Italian.

Physiological responses may also enter into deciding which language to study. Just as some people are drawn to certain musical instruments or certain color combinations, some children find the sounds and rhythms of a particular foreign language particularly attractive. You may want to select a foreign language based on this. The positive biofeedback that the kid experiences each time he practices the language will create motivation. Listen to tapes in several languages to decide if this applies.

Prevalence of the language is a last consideration for those addressing the question, "What language?" To decide between two languages, consider choosing the language with more speakers. The Sidebar shows the top languages by world population as of 1996, according to the web site, Ethnologue: Languages Of The World.

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LANGUAGES BY POPULATION

(Figures from Ethnologue: Languages of The World)

Rank	Language	Home Country	# of Speakers Worldwide
1	Chinese (Mandarin)	China	885,000,000
2	English	United Kingdom	322,000,000
3	Spanish	Spain	266,000,000
4	Bengali	Bangladesh	189,000,000
5	Hindi	India	182,000,000
6	Portuguese	Portugal	170,000,000
7	Russian	Russia	170,000,000
8	Japanese	Japan	125,000,000
9	German	Germany	98,000,1000
10	Chinese (Wu)	China	77,175,000
13	French	France	72,000,000
25	Arabic (Egyptian)	Egypt	42,500,000
27	Italian	Italy	40,000,000

TOTAL IMMERSION

Consonant with my lifelong observations, all foreign language hobbyists agree that the best way to learn a foreign language is to move to a country where the language is spoken, live there, and use the foreign language all day, every day. Language learning techniques that approach that ideal situation are called Total Immersion. Total immersion foreign language learning has several components:

- Listening and speaking before reading and writing;
- Listen, listen, listen - every day;
- Live life - to the extent possible - in the foreign language.

The first Total Immersion technique involves listening and speaking before reading and writing, certainly before attempting a formal foreign language course. Too many instructional programs begin with reading and writing, adding listening and speaking as a nice, but nonessential overlay. This would be okay if it worked. But, clearly, as countless students in schools demonstrate daily, it does not.

Many homeschooling families, as well as hobbyists who succeed with foreign language instruction, begin with the second Total Immersion technique: lots of listening. They borrow audiotapes and videocassettes from the library and hear the language daily for one to two years. Hundreds of hours of listening prior to attempting formal instructional materials eventually facilitates the hard stuff: learning grammar and idioms and extended vocabulary.

What to listen to? Audiotapes and videocassettes are the obvious first choice. Think beyond instructional cassettes. Consider children's storybooks, movies, and vocal music. Many Disney films are now available in French, German, even Japanese. Check out TV programming - news, weather, sports. Find something to listen to each day. Do not worry about comprehending every word. Just listen, listen, listen.

For listening practice, hosting a foreign exchange student in your home for two weeks to several months each year is the next best thing to moving to another country. On a smaller scale, you may want to invite a speaker of your target I language to dinner once per week. Ask friends neighbors, and relatives, to help you find a likely candidate. Often nearby

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universities can connect you to a local foreign-exchange college student who needs "adopting" for occasional meals and family get-togethers.

The third part of Total Immersion involves using the language as much as possible each day. At first, this takes a good deal of thought. Learn basic conversation and use it: "Hello," "How are you?" "What time is it?" "Please," "Thank you." Increase your stock phrases and answers each week.

Work the language into your daily life in other ways. Construct your own diglot weaves. Label everything in the house in the foreign language. Read children's stories aloud to the whole family in the second language. Listen to audiotapes in the car. Follow recipes in Spanish or French. Do math in the Japanese or German. Continue to listen to vocal foreign language music and watch videos. Write to Mexican or Russian pen pals.

Expand your knowledge of countries where your target language is spoken. Consider supplementing with unit studies of French or Portuguese-speaking countries, for example. Identify countries where the language is spoken. Learn about their cultures, music, government, coinage, flags, geography, climate, whatever you and your teenagers find interesting.

As you and your children move into the third phase of Total Immersion speaking the language in real life situations - begin formal foreign language instruction. Several popular programs are listed in the Resources sidebar. Any teenager with a strong listening background and a tangible goal will move through these materials at an astounding rate -and probably enjoy the process.

Above all, as a parent, do not worry about your lack of expertise. Given the results of foreign language instruction in most schools, lack of expertise is an asset!

LANGUAGE RESOURCES

Artes Latinae
Bolchazy-Carducci Publishers
800 392-6453, http//www.bolchazy.com Latin self-study book and CD-ROM programs.

A Web of On-Line Grammars,
http://www.buchnell.edu/~rbeard/grammars.html
On-line foreign language lessons and helps.

The Rosetta Stone
800 788-0822 http:/www.therosettastone.com
Computer-mediated foreign language instruction with no English translation; free demo CD contains sample lessons for 10+ foreign languages.

Destinos (Spanish)& French In Action Public Broadcasting System (PBS)
800 257-2578; http://www.pbs.org
Ask about free promotional materials. Series of video programs with accompanying textbooks intended for high school or college level.

Ethnologue: Languages of the World
http://www.sil.org/ethnologueftop100.html
Fascinating facts and figures!

The Learnables
International Linguistics Corp.
800 237-1830; http//www.home-school.com /Mall/ILC/Learnables.html
Audiocassette-workbook programs in many foreign languages; pictures, no English translation.

Power-Glide Language Courses
801 373-3973; http/www.power-glide.com; workbook and CD versions. Uses many technique including games, diglot weaves, anecdotes and stories, grammar games, and much more. Learn more than the target language; learn language-learning techniques!

World of Reading
404 233-4042; http://www.wor.com; Vidoes, audiocassettes, and books in many languages.

Calliope Books
Rt. 3, Bx 3395, Saylorsburg, PA 18353; 610 381-2587; Books, tapes, curricula, card games, readers, and more for an incredible variety of languages. Owner is a foreign-language hobbyist - will help assemble materials to fit your situation.

HISTORY FOR EVERYONE: Beyond Names, Dates, & Places

by Cafi Cohen

With early and middle years children, we study history by telling stories, constructing timelines, and learning names, dates, and places. – "In fourteen hundred ninety-two, Columbus sailed the ocean blue." We try to impart a framework consisting of who, when, and where.

We continue this process with teenagers and at the same time expand upon it. Teenagers have more mature critical thinking capabilities and can handle more grown-up information. Adolescent history study differs from that of younger children in three areas:

1. Discussing cause and effect
2. Comparing conflicting accounts and assessing sources
3. Handling more mature themes

CAUSE AND EFFECT

Cicero, the ancient Roman orator and politician, wrote, "The causes of events are ever more interesting than the events themselves." Unfortunately, the typical American knows when and where the Pilgrims landed but has no idea why. As a consequence, the typical American has missed all the interesting stuff. While younger children, like our typical American, learn when and where Columbus sailed, teenagers should proceed to the next step – discussing the multiple influences that caused Columbus to make his historic voyages.

Cause and effect in history are just as complicated as cause and effect in everyday life. We seldom ascribe a single cause to our actions. Similarly, teens are ready to understand that different authors – depending on their biases – will cite different reasons for historical events. A classic example is the onset of the War Between The States (or the Civil War or the War for Southern Independence, depending on your sources). Frequently cited causes include slavery, states' rights, and culture and lifestyle conflicts. "How did these causes interact?" and "Which was most important?" are questions that fuel lively discussions.

CONTRASTING SOURCES AND ACCOUNTS

Will and Ariel Durant authored the eleven-volume opus, *The Story of Civilization*. Will Durant pointed out the inadequacies of any historical account, commenting, "Only a fool would try to compress a hundred centuries into a hundred pages of hazardous conclusions. We will proceed." Never expect the full picture of any situation from a single author. Never expect an unbiased account in any history book – even and especially those written by committees. Never expect absolute truth.

Teenagers are ready to read different accounts of historical events and – in assessing these accounts – develop their critical thinking abilities. With your teens, you can begin to closely examine the backgrounds and motives of historians. How similar are accounts from different authors? What is the quality of their sources? How well do they support their arguments about cause and effect? How can a reader evaluate these accounts?

MATURE THEMES

As our children move into adolescence, they begin to learn about and discuss some of the darker periods of history, like the Holocaust. We all understand the reluctance to discuss difficult subjects like massacres and bloody conflicts with early years children. The teen years are the time to bridge the gap between childish knowledge and adult knowledge and to

realistically describe things like the horrors of war.

In addition, teenagers are ready to learn the facts behind the facts – that some of our country's founding fathers owned slaves and that the settlement of North America by European adventurers and explorers brought terror and disease to native Americans, for example. Nearly every turning point in history is accompanied by good and bad effects, depending on which group of people you consider. The teen years are a time to delve more deeply and see the full picture.

CREATIVE APPROACHES TO HISTORY

If you ask 100 homeschooled teenagers about their favorite subject, you will hear a surprisingly high percentage respond "history". Homeschooling families, in most cases, go far beyond a dry recital of names, dates, and places – focusing, instead on approaches that make history not only interesting and fun, but in some cases addictive. Read on to learn about some of these approaches.

See The Movie

This is probably the most popular way to begin the study of any historical topic. So many readily available movies and documentaries fit into the category, Historical Film (see sidebar). Our teenagers thoroughly enjoyed The Great Escape, an account of the largest escape from a German prisoner-of-war camp in World War II. Obtain many of these videos free at your local library. Or tape them from PBS and cable entities like The Learning Channel, The History Channel, and Arts and Entertainment.

Read Beyond Textbooks

Historical fiction, biographies, and popular histories make gripping reading. Examples are *Gone With The Wind* (historical fiction), *Roots* (biography), and the recently released *The Illustrated Longitude* by Dava Sobel (popular history). This last title, published in 1998, contains a fascinating I-can't-put-this-book-down account of a relatively unknown genius who solved one of the greatest scientific problems of the seventeenth and eighteenth centuries – how to measure longitude.

FAVORITE HISTORICAL FILMS & MINI-SERIES – FOR TEENS

[Caution: Children 12 and under and som teens may not be ready for some of th content in these films. Preview or watc together as a family.]

The Agony and the Ecstasy
Amistad
Apollo 13
Becket
Ben Hur
The Court-Martial of Billy Mitchell
Dances With Wolves
Empire of the Sun
Eyes On The Prize
The Great Escape
Glory
The Inn of Sixth Happiness
A Man For All Seasons
Masada
The Miracle Worker
The Robe
Roots
Spartacus
The Ten Commandments
Tora! Tora! Tora!

Join The Re-Enactors

I have heard from many homeschooled teenagers about the Civil War Re-Enactment Groups that meet all over the nation. Generally, participants assume the identity of someone in a particular regiment. They dress the part and join the battle, realistic in as many details as possible – except for the live ammunition! Find more information about Civil War Re-enactment at <http://www.cwreenactors.com>.

Another popular activity along these lines is the Society for Creative Anachronism (SCA), an international organization dedicated to – according to their website – "The study and recreation of the European Middle Ages, its crafts, sciences, arts, traditions, literature, and so on. The SCA "period" is defined to be Western civilization before 1600 AD, concentrating on the Western European High Middle Ages. Under the aegis of the SCA we study dance, calligraphy, martial arts, cooking, metalwork, stained glass, costuming, literature... well, if they did it, somebody in the SCA does it (except die of the Plague!)."

They go on to point out that what separates the SCA from a Humanities 101 class is the active participation in learning. To learn costuming, participants design and make costumes. To study war, participants make infantry wear, armor, weapons and so on.
Typical events are feasts, archery tourneys, dance balls, meetings. Participants in these groups usually assume the identity of a Renaissance (or earlier) character. Months of research goes into developing each character's dress, occupation, and personality. Great for hands-on kinesthetic – and dramatic – history buffs of all ages. Contact for the Society for Creative Anachronism is <http://www.sca.org> or 800 780-7486.

Tie History To An Interest

Everything has a history – natural disasters, music, aircraft, math, libraries, card games, gardening, computer games, film, even skateboards. Many homeschoolers enjoy exploring the history of another primarily non-historical interest. Math whizzes study ancient numbering systems. Our son – now an F-16 pilot – loved anything concerning the history of aviation and aerospace. Beginning the mythological Icarus, who made the first wings with feathers joined with wax, aeronautics goes back to ancient times. Our daughter was fascinated by Bette Davis and loved old movies. She watched hundreds of pre-1940's films, and read books about early film making for a course we eventually documented as "The History of Film" on her transcripts.

Read the History of Everyday Life

So many history texts include only information about wars, rulers, and boundary changes of countries – the big stuff. Your teenager may prefer to delve into slang and everyday speech, lighting methods, popular clothing styles, occupations, money, health, medicine, food, amusements, courtship and marriage, crime – in short, the history of everyday life.

From *The Writer's Guide To Everyday Life In the 1800's*, check out some of the idioms and vocabulary: "Candlelighting" meant dusk or early evening; "Guttersnipe" meant a homeless child who roamed or slept in the streets; "Like a book" meant to speak eloquently or with a large vocabulary. Interestingly, even simple vocabulary study can begin to paint a picture of the how people lived in earlier times. For more everyday life history, don't miss the new publication, History Magazine <http://www.history-magazine.com>.

FOUR NEAT, OFF-THE-BEATEN-PATH HISTORY WEBSITES

History of Money from Ancient Times to the Present Day by Glyn Davies
<http://www.ex.ac.uk/~RDavies/arian/llyfr.html>
Detailed timelines and essays relating to the history of money. Fascinating.

The American Civil War Worldwide Information Archive <http://users.iamdigex.net/bdboyle/cw.html>
Links to documents, books, re-enactments, regimental histories, and much more.

The History Net <http://www.thehistorynet.com>
Articles, book recommendations, discussions, eyewitness accounts, aviation and technology, picture gallery.

HyperHistory Online
<http://www.hyperhistory.com/online_n2/History_n2/a.html> Site presents over 3000 years of world history with a combination of colorful graphics, lifelines, timelines, and maps.

Do History

Family history gives homeschooling teens a chance not only to study and learn history, but also to *do* history. Family historians and history writers practice all those tasks we worry about homeschoolers accomplishing when they go to college: taking notes, organizing research material, and writing. Better than that, family historians have the opportunity to obtain primary source material and to interview eyewitnesses. A good beginner project? Interview parents and grandparents, then write their biographies. Dress these up with time lines, photos, captions, and cartoons, even family trees.

FAMILY HISTORY RESOURCES

Cyndi's List of Genealogy Sites On Th Internet, "How To" Category <http://www.cyndislist.com/howto.htm> Fro main page, also check on the "Kids and Teens category.

Research Tips On Gathering Your Famil Information. http://ourworld.compuserve.com/homepages/Stran/tips.htm

Unpuzzling Your Past: A Guide To Genealog by Emily Anne Croom (Betterway Publications 1995)

Combine History With Travel

Travel is a natural spur to study history because when we travel the first things we notice are those things that differ from where we live. These might include the language, customs, laws. History begins to answer the question: "How and why are things different here than at home?"

Homeschooling freedom makes history fun. Use textbooks for reference or to gain an overview of a period. Otherwise, dive in and enjoy the many fascinating pursuits this subject creates. You need not copy schools and do a year each of American History, World History, and Geography to create a good history background for your teens. Be creative, see where your nose leads you, and explore some of the resources accompanying this column.

AN ECLECTIC SAMPLING OF FASCINATING HISTORY TITLES

Ancient Rome: How It Affects You Today by Richard Maybury (Bluestocking Press, 1995)

Genius: The Life and Science of Richard Feynman by James Gleick (Vintage Books, 1993)

The Hiding Place by Corrie Ten Boom (Fleming H. Revell Co., 1996)

Lies My Teacher Told Me: Everything Your American History Textbook Got Wrong by James Loewen (Touchstone Books, 1996)

Maus: A Survivor's Tale by Art Spiegelman (Pantheon, 1993)

The 100: Ranking The Most Influential People of All Times by Michael H. Hart (Carol Publishing Group, 1993)

Roots by Alex Haley (Dell Publishing, 1980)

The Spirit of America : Words of Advice from the Founders in Stories, Letters, Poems and Speeches Edited by William J. Bennett (Touchstone Books, 1998)

The TimeTables of American History by Laurence Urdang (Touchstone Books, 1996)

Whatever Happened To Justice? by Richard Maybury (Bluestocking Press, 1992)

The Writer's Guide To Everyday Life in the 1800's by Marc McCutcheon (Writer's Digest Books, 1993)

LEARNING AND DOING SCIENCE

by Cafi Cohen

Prior to beginning our homeschooling odyssey, I earned two science degrees, one in chemistry, the second in medical technology. I had worked as a hospital lab technologist, a university research assistant, and an investigator for the Federal Food and Drug Administration. My resume included teaching immunology and microbiology at a Minnesota college plus a stint as a high school biology student teacher.

My background also included some self-instructional science. While pregnant with my son, I taught myself basic electronics and radio wave propagation theory sufficient to pass the FCC Amateur Radio License exams. Later, when our kids were still toddlers, my husband and I studied astronomy, including operation of a sophisticated telescope – all using self-instructional materials.

Some homeschooling parents might say I was lucky. I had the technical expertise to handle high school level science. And I had enough background to know that the whole world is a laboratory, that special equipment for science is unnecessary, even at the high school level.

Yes, I could "teach science." But my time in classrooms showed me that traditional high school science instruction – by and large – often leaves no more impression than asking a teenager to clean his room. On a good day, your efforts might lead to a temporary change – but that's it. From the word "go," I discarded the idea of three to four years of formal science instruction for my two teenagers. But where did that leave us?

It left us contemplating the two distinctly different disciplines called science in this country – classroom science and real world science. The dichotomy is reflected in the two principal dictionary definitions of science:

(1) a branch of knowledge or study dealing with a body of facts systematically arranged and showing the operation of general laws: and
(2) systematic knowledge of the physical world gained through *observation and experimentation*.

Classroom science instructors and textbook publishers – purveyors of traditional science instruction – focus on the first definition, the "body of facts" and "systematic knowledge" and "general laws." The result? Students taking biology read the text, complete worksheets, bumble through "experiments" (which, sadly, have but One Right Answer), and take exams to demonstrate that they can differentiate porifera from coelenterates. Classroom science, despite the efforts of some outstanding teachers, rewards memorization and regurgitation. Answers are prized; questions are discouraged. We all know the drill. And we all know that traditional instruction is more likely to discourage rather than encourage interest in science.

In contrast, real world scientists practice definition (2) above, "knowledge of the physical world gained through observation and experimentation." Notice the implied verbs – "observing" and "experimenting," in short DOING.

Although most scientists read and review previous research pertinent to their fields of study, they focus on doing, rather than on memorizing what everyone else has done. Instead of rehashing another's explorations and discoveries, real world scientists study the unknown, the not-yet-understood. Their questions are just as important as the answers. Unlike the situation with classroom science, real world scientists are often rewarded for asking new questions and for creative experimental design.

Another major difference between traditional science instruction and real world science is that scientists work on real problems, like roses that will not bloom, maximizing corn yield, treating a pet's broken leg, or predicting the weather. In contrast, classroom science uses predetermined "problems", which too often have little to do with real life. Here's an example from a biology "experimental" manual: "Draw a tapeworm and label all the parts."

Another distinction between real science and classroom science? Scientists work on one problem at a time – until they are done or exhausted. Rather than surveying a field like biology or chemistry or nutrition, they experiment with one system or they seek to answer a single question – sometimes for years. We do the same thing in our homes when we try recipe variations, organize a rock collection, or fix an appliance. Classroom science seldom allows time for the *depth* that is routine real scientists. Depth, in a classroom, almost always yields to breadth and "coverage." Coverage is nice, but it excludes depth. And breadth excludes what real scientists do to solve problems.

It's important to understand the differences between classroom science and real world science when deciding how to approach astronomy or chemistry or physiology with your teenagers. The lives of both Thomas Edison and Albert Einstein demonstrate that scientific competence in the real world does not always translate into classroom competence – or vice versa. Know primarily that there is no One Best Way to learn science and that there are many valid alternatives to textbooks.

Educational philosophy enters in, as well. Because homeschools, by definition, are mini-experiments in education, no two families will approach science with their teenagers in exactly the same way. Some families prefer an unschooling approach, applying scientific concepts as opportunities present themselves in everyday life. Others prefer a more formal presentation. Still others, like us, will use a mixture of interest-initiated learning and traditional textbook review. With that in mind, here are some tips and hints regarding approaches to science with teenagers.

RECOGNIZE THE SCIENCE IN EVERYDAY LIFE

Typical science activities include observing, measuring, categorizing, asking questions, forming a hypothesis (guessing how something works), proposing solutions, trying solutions (experimenting), summarizing findings, evaluating results, recycling back to observing, and sometimes reporting. If your teenager fixes an appliance, that is science. If your daughter collects and classifies insects, that is science. If your son experiments with model rockets, that is science. Watching a PBS or TLC program on volcanoes is science. If your entire family reads and discusses everything they can find about a certain kind of cancer because a grandparent has recently been stricken, that is science.

EXPAND ON THE SCIENCE IN EVERYDAY LIFE

Let one thing lead to another. One teenager I know volunteers with a wildlife rescue group. At age 15, she has learned to nurse sick birds and other animals back to health. And that is not the end of it. She reads incessantly about wildlife and ecology. That has led to reading about chemical pollutants and chemistry in general. One of her wildlife mentors has noticed her interest and recommended her as an animal caretaker at the local children's museum.

Does your family like stargazing? Next time you are outside trying to remember the names of constellations, get out a star map and increase your vocabulary. Find the Milky Way and a planet or two. Check

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out recent issues of the magazine, *Astronomy*, and try one of the beginner projects.

Avoid being intimidated by the words "scientific method," wondering if you are doing things correctly. Think of the scientific method as a set of suggestions, and then do what real scientists do – use your common sense. Many scientists argue that the scientific reasoning only looks like a "method" in retrospect. They say that persistence, creativity in formulating questions and hypotheses, and plain old fashioned dumb luck are more important than rigorously following a preset thought process. Robert Pirsig, author of *Zen and The Art of Motorcycle Maintenance* agrees: "The traditional scientific method has always been at the very best 20-20 hindsight. It's good for seeing where you've been."

BEYOND BCP (BIOLOGY, CHEMISTRY, PHYSICS)

Most people equate the words "high school science" with biology, chemistry, and physics, usually in that order. There is nothing sacred about these topics, however. In fact, taking survey courses in biology, chemistry, and physics is probably one reason so many people are adverse to science, in general. With a survey course, you never have time to do what Real Scientists do, work on one problem in depth.

Instead, your teenagers may want to consider a specialized area, a single problem, in one of the following areas – astronomy, botany, geology, meteorology, electricity/electronics, nature studies, health and disease, nutrition, parasitology, paleontology, herpetology, history of science. College catalogs usually state two or three years of "science" as adequate preparation for their programs. Most do not specify biology, chemistry, and physics. And most do not specify that applicants must have taken a survey course. Choose an interesting area. Work on one topic or problem in depth.

DABBLE IN "SCHOOL" SCIENCE

Despite the downsides of formal science instruction, texts can be a valuable adjunct to homeschool science learning. My teenagers and I agreed with David and Micki Colfax who say that if you want to play the game (at a traditional college), you will probably need to demonstrate that you know the rules and some of the vocabulary.

Does that mean "know all the biology in the biology text?" No, I don't think so. Specific text content (is this advanced enough?) is not as important as familiarity with the read-worksheet-memorize-exam round-robin. Experience with the text-science-learning procedure is the real goal – specific content is secondary.

With respect to text content, we urged our kids to focus on two things: (1) basic vocabulary and (2) those topics that have everyday life applications. Survey courses in most subjects are just dressed up vocabulary exercises, so learning the vocabulary gives teens a good overview. That does not mean "Learn all the vocabulary." Just try to establish conversational knowledge of terms that have meanings outside of the specialized field. Examples of worthwhile vocabulary from a biology textbook might be: immunity, pathogen, evolution, parasite, symbiosis, taxonomy. Examples of less important vocabulary include centriole, blastula, cytokinin, and thallus.

We also appreciated that some textbook topics have applications in everyday life. We "covered" those concepts, usually by discussing them. Examples include transmission and spread of disease, understanding ecosystems enough to vote on environment concerns, and basic electricity (why does our 20-amp circuit breaker keep blowing?). Peruse texts and carefully select those subjects you and

your kids agree that everyone should know. Never let a text intimidate you. Inclusion of a topic does not mean it's a need-to-know. Just ask yourself whether or not the knowledge of item X has been important in your life.

If a self-instructional stint with a text sounds too intimidating, consider correspondence and distance learning science courses, as well as local community college classes. Both our kids took biology from American School, which offered it as a lab science course. Our son took physics and engineering and geology at local colleges at ages 15 and 16.

BETTER THAN TEXTS

Some of the best science materials available were not written as texts. One of the premier examples is Gerald Durrell's book, *The Amateur Naturalist*. The author, an enthusiastic, accomplished hobbyist, describes how to observe environments in your community, make collections, preserve specimens, and so on, beginning with your backyard. *The Amateur Naturalist*, like many books written for by hobbyists for the lay public, contains practical, interesting projects, together with beautiful photographs. Some of my other favorites appear in the resources sidebar.

COMMUNITY SCIENCE OPPORTUNITIES

Volunteering and youth community groups provide outstanding opportunities for hands-on science, solving real world problems – and having fun in the bargain. Our daughter volunteered in a veterinary clinic for a year. She learned how to take vital signs on cats, dogs, and horses. She prepared laboratory specimens, made up inoculations, and assisted with autopsies and biopsies. All in all, at age 13, she had a much more in-depth biology lab experience than any high school biology class could provide.

Our son (first with 4-H, then with Civil Air Patrol) experimented with model rocket designs for years. He entered competitions and constantly refined parameters like size, design details, payload, and fuel to obtain optimal results (length of flight). 4-H insect collections make marvelous science projects, as do many other 4-H activities.

Other ideas? Just look around. One poster to the HEM on-line bulletin boards recently wrote: "We're about to begin a three-year commitment with the county water quality commission to monitor the health of the creek that runs through our property. Another homeschool family on another creek is also participating, so we plan to do this jointly and compare results. Also, a highway will be built downstream from us, and we intend to take some samples below that to see how much it disrupts the stream flow; we can compare those samples to ours. I also just met a woman from the Pollution Control Agency, and she offered the use of their lab's microscopes as well as her own expertise."

EXPLORE MULTI-MEDIA

When were homeschooling (1980's-early 1990's), our multi-media options included PBS and a couple of cable television channels, The Learning Channel and the Discovery Channel. Since that time, programming on these channels has improved dramatically, bringing live operations, exploding volcanoes, and pictures of the ocean depths into our homes 24-hours a day. Take advantage of these offerings. It is much easier to understand bacterial replication from a live microscopic demonstration than from a textbook diagram of the same process.

In the last two-three years, the WEB has exploded. Is your teenager interested in space? Use "NASA" as a search term, and check out the incredible opportunities to participate in virtual science activities.

One of the best lists of on-line science sites for kids and teenagers and the rest of us is at B. J. Pinchbeck's Homework Helper, <http://ww.tristate.pgh.net/~pinch13>.

SCIENCE RESOURCES

The Amateur Naturalist by Gerald Durrell

Chemistry Around You: Experiments and Projects with Everyday Products by Salvatore Tocci

Chemistry Made Simple, Revised Edition by Fred C. Hess, revised by Arthur L. Thomas (published by Doubleday; similar titles for physics and astronomy)

Experiences in Biology, Cooking and Science, Aviation, and other hands-on titles from Castle Heights Press, 770-218-7998, <http://www.flash.net/~wx3o/chp>

The Naturalists Year: 24 Outdoor Explorations by Scott Camazine

Physics: An Incremental Development by John Saxon

Stars & Stories, CD-ROM from Wildridge Software, 888-BIGGERWORLD, <http://www.wildridge.com>; outstanding, challenging amalgamation of astronomy, math, and mythology

Thinking Physics: Practical Lessons in Critical Thinking by Lewis Carroll Epstein

TLC, PBS, Discovery TV documentaries

LIFETIME FITNESS

When we were homeschooling, in the late 1980's and throughout much of the 1990's, our teens were very active. Although the states where we homeschooled, New Mexico and Colorado, allowed our son and daughter to play sports at public school, we never took advantage of these opportunities. Why? The larger community offered so much more.

Both of our teens played Little League baseball and softball from ages 11 to 16. During his high school years, our son trained with a US Diving Team sponsored by the local Parks and Recreation Department. Our daughter took Tae Kwon Do at a local military base and played volleyball with church leagues. Our entire family joined a cross-country ski club and participated in several skiing expeditions to the nearby mountains.

Homeschooled teenagers have an incredible number of options for team sports and physical fitness. Certainly, the experience of home educators nationwide demonstrates that homeschooling does not rule out team sports. A little networking, trial-and-error, and creativity goes a long way. Furthermore, implementing sports and physical education into your homeschool program paves the way towards a larger goal – lifetime fitness. Because academics consume less than two to four hours daily, home educators find themselves with more time to encourage active lifestyles than families whose teens attend school.

Read on to learn about accessing sports in your community and promoting lifetime fitness.

SPORTS IN YOUR COMMUNITY

*To find sports outside of traditional high schools, check your local community agencies, even those that seem on the surface to have nothing to do with sports.

Examples? Find swimming, diving, yoga, martial arts, and aerobic dancing with the local Parks and Recreation Department. Community education classes, generally open to ages 14 and up, may offer hiking, dance, and synchronized swimming. The Red Cross usually provides swimming, lifeguard training, and water safety instructor classes. Church leagues welcome all for bowling, volleyball, and sometimes basketball and baseball.

As homeschoolers (and, in our case, as a family who moved every two to three years), we learned to look beyond our teenagers' immediate preferences. The dictum, "When in Rome. . ." applies here. Our son was not initially interested in diving – but he needed sports participation for his college applications to the military academies. Other home educators in our neighborhood highly recommended the nearby diving team. The outstanding coach could and did inspire everyone – including our son. If the ideal sport is unavailable, assess what IS available – the good programs, instructors, and coaches that exist in any community.

*Many communities have adult leagues that welcome teenagers. Examples are basketball teams, baseball teams, and bowling leagues. Ask personnel at sporting goods stores for contacts for these opportunities.

*Special interest groups provide additional options for team sports and physical activities. Most notable are the distance running, biking, and walking groups that exist even in small communities. These clubs usually welcome participants of all ages and provide expertise and focus for the very inexpensive lifetime sports. Gifted high school age runners may even find enough training support in running clubs to qualify for athletic scholarships in track and cross-country.

In this vein, our family enjoyed the outings of our cross-country skiing club in Denver. All ages were welcome. Everyone participated in mountain treks of various lengths. Club members happily spent hours sharing their expertise and enthusiasm.

*Some youth groups offer sports, including team sports, as part of their programs. Through the Civil Air Patrol Cadet Program, our son trained for the mile run and periodic fitness tests. Some 4-H groups field volleyball or other sports teams. Our daughter learned basic archery through 4-H. Other youth-oriented outlets include scouts, Camp Fire, and Police Athletic League programs.

*Do not overlook sports at government schools. A few state statutes specifically permit participation of homeschooled teenagers in high school sports. In many other states, no policy has been set, and cases are simply handled on an individual basis. Contact local or state homeschool groups for information before talking to your school district about this. The support groups can tell you which laws, if any, apply, and what the experience of local homeschoolers has been.

To deal with a school that has set a negative policy that forbids homeschooler participation in sports, remember that rules are made to be bent. A persistent homeschooler's enthusiasm has won over many reluctant coaches and administrators. Create loopholes. Perhaps your homeschooler could train with the team as long as he did not compete. With his foot in the door, the coach may eventually invite the homeschooler to compete, all rules and regulations to the contrary. Talented athletes can prove irresistible.

*Private schools present additional opportunities. Many private institutions allow and encourage participation of homeschoolers. Usually there will be a fee. For private schools that have never included homeschoolers, suggest it to them. Most coaches will go for anything if you suggest putting it "on a trial basis".

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*Community colleges offer classes in various sports and may allow participation on certain teams, especially in the case of homeschoolers aged 16 and up. Kill two birds with one stone – earn college credit and enhance physical fitness at eh same time.

*Private clubs and private lessons provide the principal outlet for certain sports, even for those who attend school full time. Obviously, homeschoolers would be on an equal footing here. Fencing, martial arts, gymnastics, dance, tennis, and golf all fall into this category. While expenses, at first, may seem prohibitive, seek creative solutions. For example teenagers can trade golf lessons for caddying. One homeschooled 15-year-old I know teaches beginning dance classes in return for advanced private lessons.

*Summer sports camps and programs exist for almost every physical activity imaginable. Encourage your teen to attend soccer or baseball or basketball camp. Call coaches at your local high schools for recommendations.

*Homeschool support groups, as they increase in size and in numbers of older kids served, are organizing their own sports teams. Often these groups make arrangements to compete with private school teams or other homeschooling groups. As an example, check out the Missoula [Montana] Home School Athletic Association <http://montana.homeeducators.com/thunder/>. They offer basketball and volleyball for teens. If something like this has not been started in your area, consider organizing it. Alternatively, you teenagers may prefer a more recreational approach – simply meeting with other homeschoolers twice weekly to play volleyball or go skating.

*When all else fails, improvise. Some activities need no external support. Teenagers can devise their own physical conditioning programs with an aerobic activity (running or walking) plus strength training. Others may prefer working with aerobics videotapes.

TEN PHYSCIAL ACTIVITIES MOST POPULAR WITH HOMESCHOOLED TEENAGERS

The combined results from several onlin surveys were used to generate this list.

Martial arts training
Dance (ballet, jazz, tap, clogging, highland, swing)
Distance running
Hiking/walking
Swimming
Soccer
Basketball
Gardening
Bowling
Baseball/softball

ENCOURAGING LIFELONG FITNESS

Alarming statistics report that our increasingly sedentary lifestyle endangers health. Just as we encourage our teenagers' character, academic, and spiritual development, we also want to encourage healthy habits, including daily exercise. All the experts point to daily physical activity as essential to good health.

For us, encouraging lifetime fitness meant making daily aerobic and strengthening activities priorities. To that end, our teenagers, almost every day, did something physical. Despite my strong unschooling inclinations, daily physical exercise fell into the same category as household chores – no choice. We tried many things, but cycling, hiking, and cross-country skiing remained perennial favorites. Yard work, a constant necessity, invigorated everyone in the family.

How can you overcome the inertia of teenage couch potatoes? Try one or more of the following suggestions.

*Discuss goals for lifetime fitness? Why is physical activity important?

My line to my teens went something like this: "Exercise is essential to health. If you do not have your health, everything else becomes that much harder – not impossible, but more difficult." Also important – exercise is a stress-buster, for everyone in the family.

*Beginning with the suggestions above, research opportunities to play sports in your community. Urge your teenager to try new activities and find one he likes.

*Schedule fun weekend family activities like hiking and cycling. Make time for a daily family walk.

*(Caution! This one is difficult!) Model desired behavior. If you, the homeschooling parent, are doing nothing now, consider adding a daily 20-30 minute walk to your routine. With malls available, bad weather is no excuse. Why should teenagers prioritize fitness if you do not?

*Free videotapes from the library offer instruction for aerobic exercise, yoga, tap dancing, jazzercise, self-defense, gardening, and much more.

*Get a step exerciser (foot-high platform) at a sporting goods store. Or make your own. Then insist that stepping-up-and-down accompany television watching.

*Keep records. Seeing progress with numbers or bar graph motivates people, teenagers included. Examples are a log of times for distances run, a journal listing tennis skills mastered, and records of competitions.

*If all else fails, do things the hard way. Suggest that your teenager become an active non-athlete. Take the stairs instead of the escalator, and walk or bike, rather than drive. Grow your own vegetables – gardening is excellent exercise. For an upper-body workout, knead your own bread. Shovel snow by hand instead of using the snow blower.

FITNESS RESOURCES

Families That Play Together Stay Together, Bethany House Publishing, 800 328-6109, <http://www.bethanyhouse.com>.

The Family Fitness Quiz: Learn what kind of shape your family is in. For a free copy, send a self-addressed, business-sized, stamped envelope to the American Running and Fitness Association, 4405 East-West Highway, Suite 405, Bethesda, MD 20814.

Fitness At Home Parent Kit and Student Training Program 315 585-2248 <drk3@cornell.edu>.

NCAA Initial-Eligibility Procedures for Home-Schooled Student Athletes; Membership Services Department, NCAA, P.O. Box 6222, Indianapolis, IN 46206-6222, 317/917-6222, <http://www.ncaa.org/cbsa/home_school.html>.

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Cafi Cohen, homeschooling mom, is the author of ***"And What About College?" How Homeschooling Leads To Admissions To The Best Colleges and Universities, 2nd Edition*** (Holt Associates, 2000) and ***Homeschooling: The Teen Years*** (Prima, 2000). She writes columns for *Home Education Magazine*, *Homeschooling Today*, and the *LINK*. Her website, Homeschool-Teens-College, contains helps for families homeschoooling 11-18 year-olds at www.homeschoolteenscollege.net. She also presents workshops at homeschool conferences nationwide. For more information about Cafi's books and workshops, contact her at: 805 473-4963 or 473-9045 or at cfcohen@pacbell.net.

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